Notice of Allowability	Application No.	Applicant(s)	
	10/707,984	HOFFMAN, DAVID MICHAEL	
	Examiner	Art Unit	
	Frederick F. Rosenberger	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the After-Final Amendment filed on 2 February 2006*.

2. ☒ The allowed claim(s) is/are *1,4-10,13,16,19 and 20*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. Applicant's reply, filed 2 February 2006, has been received and entered. Claim 13 has been amended. Claims 2-3, 11-12, 14-15, 17-18, and 21 have been cancelled. No new claims have been added. Thus, claims 1, 4-10, 13, 16, 19, and 20 are currently pending in this application.

Allowable Subject Matter

2. Claims 1, 4-10, 13, 16, 19, and 20 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Independent claims 1 and 13 include the limitation of an array of backlit photodiodes wherein the layer on which the backlit photodiodes are disposed has a uniform thickness equal to or less than 100 microns and the backlit photodiodes have a cell-to-cell signal crosstalk equal to or less than 2%.

As applicant has pointed out in his arguments (see page 10 of the response filed 3 January 2006), Luhta et al. achieve a crosstalk value of less than 2%, but fail to do so with a uniform thickness (i.e. a bulk substrate thickness without slot modification) or a thickness less than 100 microns.

Mattson et al., as cited in the Office action mailed 3 November 2005) teaches a back illuminated photodiode similar to the claimed invention. Mattson et al. acknowledge that spatial resolution is a function of the layer thickness (column 7, lines

63-65), but fail to address the specific thickness range and the corresponding crosstalk value range as claimed.

Other prior art references (see cited prior art of record of interest but not used below) teach attainable uniform thicknesses for the layer on which the back illuminated photodiode array is disposed, but fail to address the specific value for the cell-to-cell signal crosstalk equal to or less than 2%.

As the prior art fails to teach or reasonably suggest the combination of a uniform thickness layer on which the photodiode array is disposed and the range for the corresponding cell-to-cell signal crosstalk value, applicant's disclosure represents a novel and nonobvious improvement over the prior art. As such, claims 1 and 13 are allowed. The balance of the claims is allowable by virtue of their dependence on independent claims 1 and 13.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fujii et al. (US Patent # 6,933,489) teach a back illuminated photodiode array. The layer on which the photodiode array is disposed can be from 10-micron to 150-

micron thick. Although vias have been etched in the layer to make electrical contacts, said vias are filled with resin to provide a uniform thickness (see Figure 1j). However, Fujii et al. is silent with regards to the inclusion of a 2nd layer with vias as well as the claimed range for cell-to-cell signal crosstalk.

Gouscha et al. (US Patent # 6,762,473) teach an ultra-thin back illuminated photodiode array. The layer on which the photodiode array is disposed can be polished to a thickness of 30-microns (Figure 3). Gouscha et al. further disclose that the configuration of the doping regions of the device result in a low crosstalk value (column 4, lines 64-65). However, Gouscha et al. are noticeably silent with regards to the specific cross-talk value range. Gouscha et al. are also silent with regards to the inclusion of a 2nd layer with vias, as claimed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frederick F. Rosenberger
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